Antecedents of mothers' emotional and cognitive responses to infant distress: The role of family, mother, and infant characteristics

By: Esther M. Leerkes and Susan C. Crockenberg

This is the peer reviewed version of the following article:

Leerkes, E. M. & Crockenberg, S. C. (2006). Antecedents of mothers' emotional and cognitive responses to infant distress: The role of mother, family, and infant characteristics. *Infant Mental Health Journal, 27*, 405-428.

which has been published in final form at https://doi.org/10.1002/imhj.20099. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions.

Abstract:

The antecedents of mothers' emotional and cognitive responses to infant distress were examined. Participants were 67 mothers and their infants. Mothers completed questionnaires assessing their experiences in the family of origin and current marital relationships both pre- and postnatally and their coping strategies prenatally. Infant temperament was observed at 6 months, and mothers were interviewed about their emotional and cognitive responses to infant distress 2 years later to assess their emotional competencies (i.e., accurate identification of negative emotions, emotion efficacy, emotional responses to infant distress, and emotion goals). A childhood history of emotional rejection was negatively associated with empathy and efficacy and positively associated with negative emotions. The association between childhood history and some emotional competencies was moderated by current marital dysfunction, engaged coping, and positive intervening relationships. Maternal marital styles and coping strategies and infant temperament correlated with emotional competencies. Theoretical and clinical implications are discussed from an attachment theory perspective.

Keywords: infant distress | maternal response to infant distress | marital relationships | infant temperament | maternal efficacy

Article:

Responding sensitively to infant distress is a challenging task for new mothers. Crying is aversive and signals that the infant needs something, although determining what is often difficult (Lester, 1985; Murray, 1985). Further, as a society we judge mothers based on their ability to manage their infants' distress. There is considerable evidence that infants' attachment security, emotion regulation, autonomy, social competence, and emotional adjustment develop in the

context of early sensitive interactions with their mothers, particularly when they are distressed (Ainsworth, Blehar, Waters, & Wall, 1978; Braungart-Rieker, Garwood, Powers, & Notaro, 1998; van den Boom, 1994, 1995). Moreover, a wide body of research supports the conceptualization that the quality of maternal behavior is determined by experiences in the family of origin, current relationships, and mother and infant characteristics (for reviews, see Belsky, 1984; Lerner, Rothbaum, Boulos, & Castellino, 2002). However, little is known about the processes that explain how these global factors influence mothers' behavior. In this study, we test the hypothesis that childhood history with parents, mothers' coping and marital styles, and infant temperament influence mothers' perceptions, thoughts, and feelings in response to infant distress, which in turn affect maternal behavior.

EMOTIONAL AND COGNITIVE RESPONSES TO INFANT DISTRESS

Drawing from the work of several parenting theorists (Ainsworth et al., 1978; Dix, 1991; Gottman, Katz, & Hooven, 1996, 1997), five emotional and cognitive processes, referred to as emotional competencies, that contribute to adaptive maternal behavior were identified. *Accuracy* refers to a mother's ability to perceive infant distress and to identify the underlying emotion. A mother who inaccurately identifies negative emotions (e.g., confuse fear with anger) engages in behaviors that are poorly matched to the infant's state, thereby undermining sensitivity (van den Boom, 1994). Mothers' emotional reactions to infant distress vary, and specific emotional states motivate different types of response (Dix, 1991). *Empathy* increases the likelihood that a mother will intervene sensitively on her infant's behalf because she understands her infant's point of view. In contrast, maternal *negative emotions* such as anger or anxiety increase the likelihood that a mother will withdraw or respond harshly in response to infant distress in an attempt to avoid or end the negative affect because it is aversive (Cassidy, 1994; Martin, Clements, & Crnic, 2002). *Emotion efficacy* is a mother's confidence in her ability to identify and respond effectively to infant distress. Highly efficacious people undertake more challenging tasks and persist longer in the face of challenge (Bandura, 1977). Thus, mothers who are confident in their ability to identify what their infants are feeling and why, and who feel capable of responding effectively, are more sensitive (Leerkes & Crockenberg, 2002; Teti & Gelfland, 1991). Finally, parents' *emotion goals* reflect what they hope to achieve through their interaction with their distressed infants. Parents who prioritize child concerns—in this case, focusing on infant emotions—are more sensitive because they prioritize their infants' needs over their own (Dix, 1991, 1992) and because they want to help their infants feel better. In sum, each of these emotional competencies may be viewed as aspects of social cognition that influence behavior in a relational context (Crick & Dodge, 1994)—in this case, parenting behavior directed toward one's infant (Dix, 1991).

In previous research with this sample, these emotional competencies were primarily independent from one another, and each was positively related to maternal sensitivity independently, in conjunction with another competency, and/or in conjunction with infant temperament (Leerkes, Crockenberg, & Burrous, 2004), supporting the view that they facilitate sensitive behavior. Thus, determining the origins of these emotional and cognitive processes may further inform theory about the determinants of sensitive maternal behavior and intervention efforts designed to enhance sensitive maternal behavior.

ORIGINS OF EMOTIONAL COMPETENCIES

Childhood History

According to Bowlby (1973), children develop internal working models (i.e., cognitive-emotional representations about the world in relation to self) in the context of early interactions with primary caregivers. Children whose parents are emotionally available and supportive develop models of themselves as competent, worthy, and lovable, and models of others as loving and trustworthy. In contrast, children whose caregivers are not consistently supportive and place excessive demands on them develop models of themselves as incompetent, unworthy, and unlovable, and models of others as unloving and untrustworthy. These internal working models become a lens through which children perceive and interpret events, forecast future events, and plan their behavior in relation to goals (Zeanah & Barton, 1989). More recently, Fonagy and colleagues (Fonagy, Steele, Moran, Steele, & Higgitt, 1993; Fonagy, Steele, & Steele, 1991) argued that mothers with secure working models engage in more sensitive behavior because they are more self-reflective, which helps them see their infants' points of view and empathize with them. Thus, a history of having emotional needs met in childhood likely contributes to mothers' emotional and cognitive responses to infant distress. Several studies support this view.

Mothers with autonomous Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) classifications, the pattern believed to emerge as the result of sensitive interactions with caregivers, were more accurate in labeling infant emotions than were dismissing or preoccupied mothers (Blokland & Goldberg, 1998), and mothers rated high on the continuous security dimension from the AAI were more likely to perceive positive infant emotions and less likely to perceive negative emotions than were other mothers (Adam, Tanaka, Broderson, & Gunnar, 1998). In contrast, women who reported experiencing parental emotional rejection in childhood had a tendency to mistake infant fear for positive emotions (Leerkes & Siepak, 2006). Further, victims of child abuse or neglect are less accurate than are others at labeling peoples' emotions (see Camras, Sachs-Alter, & Ribordy, 1996), a difficulty that may continue into adulthood in the absences of positive intervening experiences.

Similarly, childhood history with parents influences subsequent emotional reactions to others' distress. Positive early interactions with parents are associated with higher empathy and sympathy in later childhood and in adulthood (Eisenberg, Fabes, Schaller, & Carlo, 1991; Eisenberg & McNally, 1993; Koestner, Franz, & Weinberger, 1990) whereas a history of child abuse is associated with lower empathy (Feshbach, 1987; Letourneau, 1981), and a history of parental emotional rejection is associated with feelings of amusement and neutrality in response to infant distress (Leerkes & Siepak, 2006). Additionally, adults raised in punitive, controlling, or emotionally rejecting environments tend to experience more hostility, negative attitudes, and negative attributions toward their own and others' infants and children (Daggett, O'Brien, Zanolli, & Peyton, 2000; Leerkes & Siepak, 2006; Lesnik-Oberstein, Koers, & Cohen, 1995). Early experiences in the family of origin also correlate with mothers' confidence in their parenting. Mothers whose parents met their emotional needs in childhood report high maternal self-efficacy (Leerkes & Crockenberg, 2002), and mothers who reported feeling accepted by their own parents in childhood perceive their infants as more responsive to them than do mothers who reported feeling unaccepted by their parents (Biringen, 1990).

In contrast, there is scant empirical evidence linking early experiences with parenting goals; however, Harkness, Super, and Keefer (1992) theorized that parents' beliefs are influenced by their parents in four ways: (a) Parents who identify negative experiences in their childhood may set goals to actively avoid similar experiences with their own children, (b) parents who identify positive aspects of their childhood try deliberately to replicate them, (c) experiences and attitudes can be replicated without conscious thought, and (d) views about development such as "keep a stiff upper lip"—an emotion philosophy—are passed from generation to generation.

Although parenting history in childhood predicts subsequent parental behavior and related cognitions and emotions, intervening experiences may alter the nature of these associations for some mothers. Mothers with problematic histories with their own parents who come to terms with these early difficulties through the support of a loving partner or by virtue of their own positive personality characteristics are likely to recover personally and to parent effectively (Egeland, Jacobvitz, & Sroufe, 1988; Leon, Jacobvitz, & Hazen, 2004; Ricks, 1985; Rutter, Quinton, & Liddle, 1983), consistent with Bowlby's (1980) view that internal working models may change over time in response to new relationships and experiences. In this study, we test whether childhood emotional rejection by parents correlates negatively with mothers' emotional competencies in response to infant distress, and whether that association is exacerbated by marital dysfunction and buffered by adaptive coping skills and the desire to be different from emotionally nonresponsive parents, particularly when accompanied by positive intervening relationships.

Coping and Relationship Styles

To the extent that exposure to a distressed infant is a stressful event, how mothers cope with stress should influence how mothers think and feel in response to infant crying. Although there is debate about the measurement and structure of coping strategies (see Skinner, Edge, Altman, & Sherwood, 2003), a distinction that has yielded useful results in the past is between engaged and disengaged coping, often referred to as approach and avoidant coping. *Engaged coping* includes behaviors that focus on the source of stress and related thoughts and feelings whereas *disengaged coping* includes responses aimed at orienting away from or avoiding the source of stress (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Roth & Cohen, 1986). *Avoidant coping strategies* are related to increased psychological distress (Aldwin & Revenson, 1987; Besser & Priel, 2003; Holahan & Moos, 1986) and are particularly maladaptive if they are used in response to stressors that are somewhat controllable (Lazarus & Folkman, 1984). Thus, mothers whose primary strategy is to avoid stressful situations likely experience negative emotions (e.g., irritation or anxiety) and self-focused goals aimed at minimizing contact with their distressed infant.

Mothers' preferences for handling stressful situations also are apparent in their responses to marital or partner conflict, and mothers' marital behaviors are often consistent with their parenting strategies. For example, in prior studies, marital conflict, aggression, and hostility were associated with parental hostility, intrusiveness, and physical punishment whereas marital avoidance was associated with permissiveness (Crockenberg & Langrock, 2001; Fincham, Grych, & Osborne, 1994; Kanoy, Ulku-Steiner, Cox, & Burchinal, 2003; Simons, Whitbeck,

Melby, & Wu, 1994). This overlap in behavior across different relationships may be the result of similar underlying processes of social cognition, such as misperception of the social partners' intentions and prioritizing personal goals over relationship goals (Crick & Dodge, 1994). Thus, we predict that mothers who use aggressive or avoidant marital strategies are more likely to experience negative emotions in response to infant distress and are more likely to have goals that prioritize their needs (e.g., I have to stop the crying so I can get other things done) rather than their infants' emotional needs. Infant characteristics also may affect how mothers think and feel in response to infant distress.

Infant Temperament

Infant temperament, particularly negative emotionality, has been associated with maternal behavior, depression, parenting efficacy, and parenting stress (for reviews, see Crockenberg & Leerkes, 2003; Rothbart & Bates, 1998). It also is likely that infants' proneness to distress affects how mothers think and feel in response to that distress. Mothers whose infants cry frequently and intensely may attribute this to themselves and experience diminished confidence in their parenting. Consistent exposure to crying also could make it more aversive, thereby contributing to mothers' increased anxiety and irritation in response to crying and a greater focus on their own needs rather than their infants' needs (e.g., I need peace and quiet).

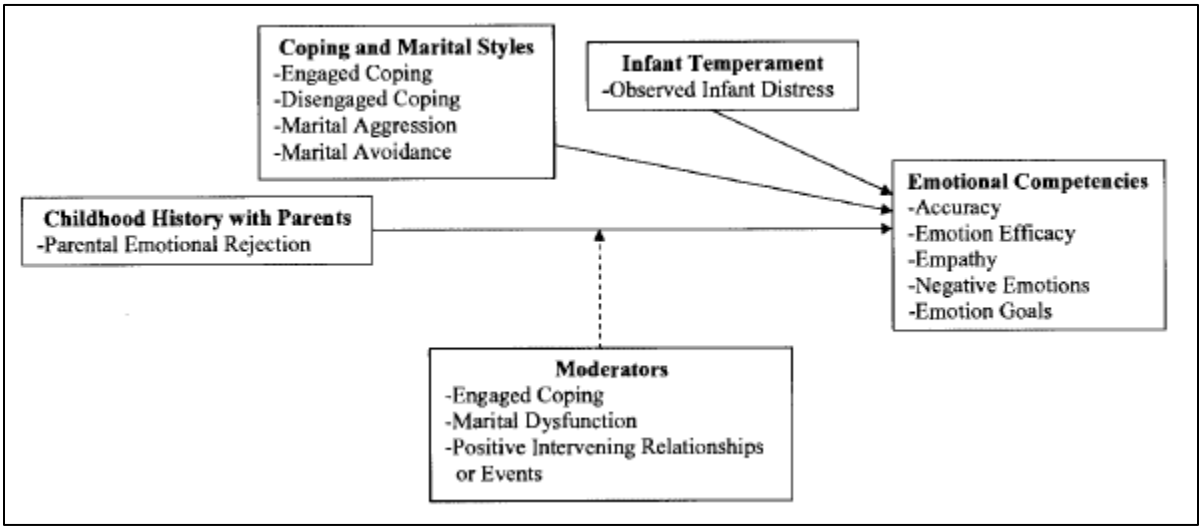

FIGURE 1. Proposed model of the developmental origins of mothers' emotional and cognitive responses to infant distress.

THE PRESENT STUDY

In sum, we test a model that posits that mothers' emotional and cognitive responses to infant distress (i.e., accuracy, empathy, negative emotions, emotion efficacy, emotion goals) are rooted in childhood experiences in the family of origin, intervening relationships or events, current coping and marital styles, and infant temperament as illustrated in Figure 1. Specifically, we hypothesize:

• A history of childhood emotional rejection correlates negatively with accuracy, efficacy, empathy, and emotion goals, and correlates positively with negative emotional reactions to infant distress.
• The association between childhood history and the emotional competencies is moderated by engaged coping, marital dysfunction, and positive intervening relationships or events. A history of emotional rejection is negatively associated with the emotional competencies *only* when one of the following conditions is present: Engaged coping is low, marital dysfunction is high, or positive intervening relationships or events are absent.
• Disengaged coping and maladaptive marital strategies correlate positively with negative emotions and negatively with emotion goals.
• Infant temperament (i.e., observed distress) correlates positively with negative emotions and negatively with emotion efficacy and emotion goals.

METHOD

Participants

Sixty-seven of 92 primiparous mothers participating in a longitudinal study of infant emotional reactivity and regulation completed the follow-up. On average, they were 31 years old (*SD*=4.52), had 15 years of education (*SD*=1.85), and had been married or living with a partner for 5 years (*SD*=2.38). Family income ranged from $20,000 to $170,000 (*M* = $69,400). Sixty-four percent had or were expecting another child; 5 had separated from or divorced their partners. Thirty-eight toddlers were male. Mothers who did not participate in the follow-up study did not differ from participants on any demographic, maternal, or infant characteristic.

Procedures

Mothers were contacted at childbirth education classes and completed a demographic questionnaire by phone shortly thereafter. They completed measures of their childhood history, coping strategies, and their partner relationship by mail during Months 7 to 8 prepartum. Mothers and their 6-month-old infants participated in a videotaped laboratory assessment of infant reactivity. Mothers completed additional measures of childhood history, their partner relationship, and an updated demographic questionnaire by mail when children were 2 years of age and visited campus for a semistructured interview about their responses to infant distress.

Measures

Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979). This 12-item care subscale was administered prenatally to assess the acceptance and warmth mothers received from their parents during childhood (e.g., made me feel I wasn't wanted (reverse coded), appeared to understand what I needed or wanted). Items were rated on a 4-point scale (1 = very unlikely; 4 = very likely) indicating how much each statement describes both mothers and fathers. The PBI has acceptable test-retest reliability over a 3-week period (.76 for the care scale) and good split-half reliability (.88 for the care scale; Parker et al., 1979). Responses were averaged to derive scores of *remembered maternal* and *paternal care* (αs=.92 and .94, respectively).

When infants were 2 years old, mothers responded additionally to 13 new items about how their parents responded to their emotions in childhood, designed by the first author, using the same response scale. Seven items composed the *emotion-centered* scale (i.e., comforted me, helped me calm when sad, tried to help me feel better, helped me be less afraid, tried to understand when I was sad, told me it was OK to be afraid, felt badly if I cried; α =.90 and .91 for mothers and fathers, respectively). Six items composed the *emotion-minimizing* scale (i.e., ignored me if upset, told me to get over it, got annoyed if I was sad, punished me if I was mad, got annoyed when I was frustrated, did not like it when I cried; α =.84 and .83 for mothers and fathers, respectively).

All childhood-history variables correlated significantly with one another, and were standardized and averaged, with the parental-care and emotion-centered scales reverse coded to create a measure of *parental emotional rejection* in childhood. High scores indicate that parents were not affectionate and tended to respond negatively to emotions (α =.88).

Coping Strategies Index (Tobin, Holroyd, Reynolds, & Wigal, 1989). This 72-item scale assessed mothers' coping styles. Mothers indicated how often they behaved in particular ways in response to relationship problems during the past 14 days on a scale of 0 (*not used)* to 3 (*used a great deal*). *Disengaged coping* is the mean response to items on four subscales: avoidance (e.g., I tried to forget the whole thing), wishful thinking (e.g., I hoped a miracle would happen), self-criticism (e.g., I told myself how stupid I was), and social withdrawal (e.g., I spent more time alone). *Engaged coping* is the mean response to items on four subscales: problem solving (e.g., I made a plan of action and followed it), cognitive restructuring (e.g., I convinced myself that things aren't quite as bad as they seem), social support (e.g., I let my friends help out), and express emotions (e.g., I let out my feelings to reduce stress). Cronbach's α were .92 and .93 for disengaged and engaged coping, respectively.

Marital Measures. The Marital Conflict Questionnaire (MCQ; Rands, Levinger, & Mellinger, 1981) was administered to mothers prenatally. It consists of 15 items that assess conflict strategies and 14 items that assess resolution patterns that characterize marital conflicts. Mothers rated how well each strategy and resolution pattern describes them on a scale of 0 (not at all well) to 3 (very well). Factor scores for marital attack and avoidance correlated negatively with marital satisfaction (Rands et al., 1981) in previous research. In this sample, mother's *verbal aggression* consisted of her mean response to 11 items: hurt other's feelings; get mad/yell; get sarcastic; the more I talk, the madder I get; start disagreeing about one thing, end up arguing about many things; end up feeling annoyed; later use something said against partner; and feel hurt; get mad/walk out; get cool, distant/give cold shoulder; take a long time to get over being mad (α =.85). *Marital avoidance* consisted of mean responses to three items: come right out and tell how feeling (reversed); clam up; avoid talking about it (α =.75).

The Conflict and Problem-Solving Scale (CPS; Kerig, 1996) was administered at 2 years because it included physical-aggression items not included in the MCQ that we wished to assess. The CPS has good convergent validity with the Conflict Tactics and the Dyadic Adjustment scales and good test-retest reliability over 3 months, r=.63 (Kerig, 1996). Using a scale of 0 (never) to 3 (often), mothers rated the frequency with which both they and their partners engaged in 44 different strategies during the previous year. Mothers also rated how happy they were with the

relationship on a scale of 0 (*extremely unhappy*) to 6 (*extremely happy*). No mothers reported physical violence, and therefore those items were not considered. *Verbal aggression* included 14 items: complain, bicker; raise voice/yell; argue in front of baby; interrupt/don't listen; make accusations; name calling/cursing; hurt other's feelings; withdraw love/affection; throw objects/slam door; throw something; argue where baby might overhear; insist on own point of view; become sarcastic; threaten to end relationship (α =.88 and .85 for mothers' reports of self and partner, respectively). *Avoidance* included six items: talk it out; express thoughts/feelings openly (reverse scored); ignore problem/avoid talking about; change the subject; clam up/hold in feelings; give in to escape argument (α =.71 and .76 for mothers and partners, respectively). Mothers' prenatal and postnatal ratings of their own verbal aggression and avoidance were maintained as measures of their characteristic style of responding to conflict. Mothers' ratings of postnatal *partner* aggression and avoidance, and the single item that assessed their happiness in the relationship (reverse scored), were standardized and averaged to yield a measure of current *marital dysfunction* (α =.70) that reflects the current marital distress experienced by the mother, a potential moderator of the association between childhood history and the emotional competencies. To maintain the sample size, mean replacement substitutions were made when mothers were divorced or separated from their partners.

Infant Temperament. Infant affect was observed during a videotaped laboratory assessment of infant temperament similar to those used by others (e.g., Goldsmith & Rothbart, 1996). Following a 5-min warm-up period, mothers placed their infants in an infant car seat and then sat 3 ft away, situated so that infants could see them with some effort. First, two novel, potentially fear-eliciting toys (a noisy, moving plastic ball and a fire truck) were introduced to assess distress to novelty, followed by a 5-min break to reduce carryover effects. Then, two potentially frustrating situations (arm restraint and toy retraction) were used to assess distress to limitations. Mothers were asked to remain neutral during the first task in each emotion context so that we could observe infants' independent responses. During the second task within each emotion context, mothers were instructed to interact with their infants in any way they liked, but not to intervene in the activity or remove their child from the seat unless they wished to end the activity. Within emotion contexts (novelty or limitations), the tasks were counterbalanced to prevent order effects.

Trained students, blind to other data, rated infant distress from videotapes on a 7-point scale adapted from Braungart-Rieker and Stifter (1996). Scores range from 1 (high *positive affect*) to 7 (high *negative affect*) based on the infant's facial expressions, body tension, and vocalizations (average κ =.83). This system yielded measures of: peak intensity of negative affect, latency to first negative, mean level negative affect, and ratio of time negative to positive or neutral for each of the four tasks. These were standardized and aggregated to form an overall *observed infant distress* variable (α =.56).

Emotional Competencies. When infants were 2 years of age, mothers participated in a semistructured interview adapted from Gottman et al.'s (1996, 1997) meta-emotion interview. Mothers viewed videoclips of 6-month-old stranger infants from the 6-month temperament assessment. The stranger infant clips included (a) two 10-s clips of an infant displaying mild fear and intense fear followed by a 1-min clip including a range of fear intensities, and (b) two 10-s clips of a different baby displaying mild anger and intense anger followed by a 1-min clip

including a range of anger intensities. Presentation of clips was counterbalanced to correct for order effects of emotion context and intensity. After viewing the short clips, mothers rated the intensity of the infant's distress, and identified the infant's emotion and their own emotional reactions to the distress. Following the full clip, they provided the same data, and indicated what they thought the baby wanted or needed, how they would respond and why, what their goal would be, and how efficacious they would feel responding. Then, mothers viewed clips of their own infants and answered similar questions. Those data are not included due to reduced sample size.[1] The interview concluded with questions about mothers' emotion goals for their children: What did you typically want to have happen when your baby was distressed? What was your goal? Why do you think this goal is important? How did you develop these ideas? Variables derived from the interview are described next, and additional details are published elsewhere (Leerkes et al., 2004).

Accuracy. Mothers rated the intensity of infant affect during each clip on the 7-point scale used by coders in rating infant distress, and the scores from the coders were used as the standard for determining the accuracy of mothers' ratings. If mothers' ratings were more than .5 below the standard rating, they were coded as minimizing, representing an inability to accurately rate distress. The number of fear and anger clips minimized was summed to yield measures of *minimize fear* and *anger* (range=0–3). Then, the accuracy of mothers' identification of specific emotions was measured. Fear, anxiety, wariness, and nervousness were considered accurate fear words; anger, frustration, irritation, and annoyance were considered accurate anger words. Mothers received a score of 1 if they named the correct emotion in the entire group of emotions they listed, a score of 2 if they also identified it as the dominant emotion, and a score of 0 if they did neither for each clip. The three fear scores (i.e., mild, intense, and full-minute clips) and the three anger scores were summed to yield measures of *accurate identification of fear* and *anger* (range=0–6). Minimizing the intensity rating and accurate identification of emotions correlated negatively, $r(65)=-.24$, $r(65)=-.47$, ps $<.05$, for fear and anger, respectively, and thus were standardized and combined, with minimizing the intensity rating reverse scored, to create two variables: *fear accuracy* and *anger accuracy*. These correlated significantly, $r(65)=.66$, $p<.01$, and were combined into a single accuracy variable.

Emotion Efficacy. Following the full-minute clips, mothers rated on a 5-point scale how efficacious they would feel knowing what the baby wanted or needed, knowing how to comfort the baby, getting the baby to calm, helping the baby soothe himself or herself, and getting the baby to play. Responses were averaged to yield measures of *fear efficacy* and *anger efficacy* (αs=.85, and .72, respectively) that correlated positively, $r(65)=.84$, $p<.01$, and thus were combined to create a single measure of *emotion efficacy*.

Empathy and Negative Emotions. Mothers' emotional responses to each infant clip were categorized as: empathy, urgency (desire to act), concern for infant, negative feelings toward the situation, objective interest, self-focused anxiety, dislike cry, positive feelings toward the infant, negative feelings toward the infant, amusement, and neutral (overall κ =.79). Mothers rated the intensity of each emotional response on a 3-point scale (1=*mild*, 2=*moderate*, 3=*very*; weighted κ

[1] Twenty-three mothers viewed own fear clips only, 23 mothers viewed own anger clips only, 14 viewed both own fear and own anger clips, and 7 viewed no clips of their own infant because their infants did not become distressed during the 6-month observation.

=.80). Emotional responses were aggregated across each set of clips within an emotion (e.g., anxiety in response to the standard fear clips was the average anxiety response to the mild fear clip, intense fear clip, and full-minute fear clip). Two variables were created. *Empathy* was the weighted average of empathy (3), concern (2), and urgency (1), with higher weightings reflecting greater emotional attunement with the infant. *Negative emotion* was the weighted average of negative feelings toward infant (3), amusement at infant's distress (2), and self-focused anxiety (1), with higher weightings reflecting more egregious negative feelings toward the infant. The emotional response variables from the fear and anger tasks correlated, $r(65)=.38$ and $r(65)=.59$, both ps $<.01$, for empathy and negative emotions, respectively, and were combined.

Emotion Goals. Mothers were asked how they would respond and what the goal of that response would be in response to each clip, and more detailed information about emotion goals came from the interview description of what they typically wanted to have happen or what their goals were in general when their infants were distressed. Mothers' emotion goals from the entire transcript were rated on two dimensions: the extent to which goals focused on the infant versus the mother and the extent to which goals were focused on the infants' emotions, rated on 9-point scales. Higher ratings reflect goals that are highly infant and emotion focused. Two coders rated each transcript, and disagreements were resolved by consensus coding. This yielded two scores: *infant focused goals* and *emotion focused goals*, weighted κ =.77 and .75, respectively. The two correlated highly, $r(65)=.75$, $p<.001$, and were combined into a new variable labeled *emotion goals*, for which high scores reflect goals that are focused on infant emotions.

Intervening Relationship Factors. After describing their goals, mothers were asked how these goals developed: how their own parents responded to them when they were distressed as children, if their own goals were similar or different to that, and whether other people or experiences had influenced their emotion beliefs and goals. The first author, and a research assistant blind to other data, coded each mother's response as present or absent in nine categories. Six of these were related to relationships: *different* (Mother indicates that she parents differently than her own parents.); *reflection* (Mother knew the way parents treated her was wrong, thought about the way a child should be treated, or thought about how she would parent differently.); *change* (Relationship with parents changed positively since childhood, or they have come to resolution with each other.); *loving partner* (Mother's partner is loving and responsive and has taught her how to love, be affectionate, or express emotions); *other relationships* (Other positive intervening relationships with relatives, friends, teachers, in-laws, etc., showed mother an alternative way to parent, made her feel loved, or helped her cope with her childhood.); *therapy* (Mother indicates that she received therapy which contributed to healing, recognition of her own worth, forgiveness of parents, or taught her to value emotions.) Percent agreement for each category ranged from 70 to 90%, and all disagreements were resolved via consensus. These data were combined to yield a 3-point measure of *intervening relationship factors* in which 1=*mother did not express a desire to be different from her own parents* (n=27); 2=*mother did express a desire to be different from her own parents*, *but had no positive intervening relationship factors* (n=26); and 3= *mother expressed a desire to be different from her own parents*, *and experienced at least one positive intervening relationship or event* (n=14).

Descriptive statistics for all variables are presented in Table 1.

TABLE 1. *Descriptive Statistics*

	M	*SD*	Range
Prenatal Data			
Parental Emotional Rejection	0.00	.79	–1.25–2.06
Engaged Coping	1.40	.49	0.31–2.61
Disengaged Coping	0.46	.36	0.03–1.81
Marital Aggression	1.13	.35	0.62–2.04
Marital Avoidance	1.25	.44	0.77–2.55
6 Month Data			
Observed Infant Distress	0.00	.56	–1.11–1.50
2.5 Year Data			
Marital Aggression	1.08	.52	0.15–2.31
Marital Avoidance	0.81	.53	0.00–2.40
Marital Dysfunction	0.00	.76	–1.47–1.88
Intervening Relationship Factors	1.81	.76	1.00–3.00
Accuracy	0.00	1.37	–3.90–1.94
Emotion Efficacy	4.05	.59	2.70–5.00
Empathy	0.00	.76	–1.52–1.93
Negative Emotions	0.00	.89	–0.59–4.12
Emotion Goals	6.68	1.84	1.50–9.00

Note: N=67.

RESULTS

Data analysis occurred in several steps. First, all data were examined for skewness, kurtosis, and outliers. None were identified. Then, simple correlations were calculated between maternal education, income, age, and each of the variables of interest to identify potential covariates. Only 1 of 45 tested associations was significant. Education correlated with parental emotional rejection, $r(65)=-.25$, $p<.05$, and was entered as a covariate in regression models. Next, simple correlations were calculated between the primary variables to examine their independence from one another and to test hypotheses. Finally, hierarchical multiple regression was used to test the moderating hypotheses, using procedures outlined by Aiken and West (1991) (i.e., variables were centered prior to constructing interactive terms, and interaction effects were plotted at fixed points of the predictors).

TABLE 2. *Simple Correlations Among the Emotional Competencies*

	1.	**2.**	**3.**	**4.**	**5.**
1. Accuracy	–				
2. Emotion Efficacy	–.07	–			
3. Empathy	.04	.04	–		
4. Negative Emotions	–.29*	–.01	–.17	–	
5. Emotion Goals	.07	.07	.07	–.10	–

Note: N=67. *$p<.05$.

Simple Correlations

As displayed in Table 2, accuracy correlated negatively with negative emotional reactions, but none of the other correlations among the emotional competencies were significant, indicating that they are primarily distinct constructs.

As displayed in Table 3, several correlations supported the view that family, mother, and infant characteristics predict mothers' emotional competencies in response to infant distress. A history of parental emotional rejection correlated negatively with emotion efficacy and positively with negative emotional reactions as expected, but not with any other emotional competency. Engaged coping correlated positively with empathy. Prenatal maternal marital aggression correlated negatively with emotion efficacy, and postnatal marital avoidance correlated negatively with emotion efficacy. Consistent with the hypotheses, each of the maternal measures that reflect an avoidant style (i.e., marital avoidance at both times and disengaged coping) correlated negatively with mothers' emotion goals. Observed infant distress correlated positively with accuracy and negatively with negative emotions.

TABLE 3. *Simple Correlations Between Emotional Competencies and Potential Predictors*

	Accuracy	**Emotion Efficacy**	**Empathy**	**Negative Emotions**	**Emotion Goals**
Prenatal Data					
Parental Emotional Rejection	.06	–.26*	–.17	.26*	–.02
Engaged Coping	–.07	.02	.34**	.03	.01
Disengaged Coping	.12	–.19	.13	–.06	–.29*
Marital Aggression	–.04	–.27*	.04	.21†	–.07
Marital Avoidance	–.08	–.13	–.23†	.08	–.39**
6 Month Data					
Observed Infant Distress	.27**	.01	–.02	–.28*	–.04
2.5 Year Data					
Marital Aggression	.08	–.16	.11	.08	.13
Marital Avoidance	–.08	–.32**	–.13	.07	–.31*
Marital Dysfunction	–.16	–.22†	.09	.11	.08
Intervening Relationship Factors	–.03	–.13	–.01	.16	.07

Note: N=67, †p <.10. *p <.05. **p <.01.

Moderating Effects

To test the proposed moderating effects on a history of emotional rejection, hierarchical multiple regressions were calculated for each emotional competency. In the first block, maternal education was entered as a covariate along with emotional rejection, and each of the proposed moderators (i.e., engaged coping, marital dysfunction, and relationship moderators) were entered. The three interactive terms were entered simultaneously in the second block (Rejection ×; Engaged Coping, Rejection ×; Marital Dysfunction, and Rejection ×; Intervening Relationship Factors) to insure their independence from one another. Thus, the model includes eight predictor variables meeting the criteria than N (in this case, =67) is ≥50 plus the number of predictors (Harris, 1985). As hypothesized, mothers' emotional rejection in childhood predicted each emotional competency as either a simple main effect or as moderated by later experiences and adult characteristics. Results are presented in Table 4, and summarized below for each emotional competency.

Accuracy. As hypothesized, marital dysfunction moderated the association between parental emotional rejection and accurate identification of infant negative emotions. As illustrated in Figure 2, emotional rejection correlated negatively with accuracy only when marital dysfunction

was high; it correlated positively when mothers reported that their marriages were functioning well.

TABLE 4. *Hierarchical Multiple Regressions Predicting Emotional Competencies*

	Accuracy *β*	**Emotion Efficacy *β***	**Empathy *β***	**Negative Emotions *β***	**Emotion Goals *β***
1. Maternal Education	.16	.01	–.10	.12	.24†
Emotional Rejection	.23	–.28*	–.38	.30*	–.02
Engaged Coping	–.08	.04	.38*	.03	.03
Marital Dysfunction	–.16	–.22†	.08	.12	.11
Relationship Factors	–.20	.04	.31*	–.02	.11
R^2 Δ for Block 1	.07	.12†	.20*	.09	.08
2. Rejection X Engaged Coping	.16	–.20	–.01	–.25*	.08
Rejection X Marital Dysfunction	–.38*	–.03	.04	.18	.10
Rejection X Relationship Factors	–.08	.18	.17	–.05	.34*
R^2 Δ for Block 2	.13†	.07	.02	.10†	.09
Total R^2	.20	.19†	.22*	.19†	.17

Note: N=67. †p <.10. *p <.05, **p <.01.

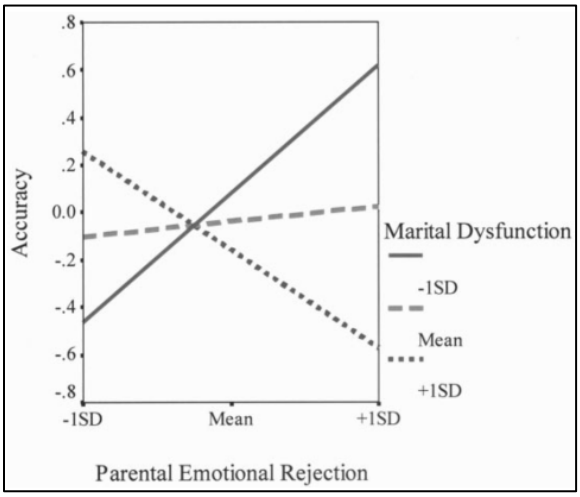

FIGURE 2. Moderating effect of marital dysfunction on the association between a history of emotional rejection and accurate identification of infant emotions.

Emotion Efficacy. The negative association between a history of emotional rejection and efficacy remained significant independent of the other predictors, demonstrating the robustness of this simple effect; however, contrary to the hypotheses, none of the proposed moderators interacted with emotional rejection to predict emotion efficacy.

Empathy. When entered simultaneously, a history of emotional rejection was negatively associated with empathy and intervening relationship factors were positively associated with empathy, demonstrating that each is a significant predictor of empathy when variability in empathy accounted for by the other is removed. None of the proposed interactions was significant in relation to empathic emotional responses.

Negative Emotions. The main effect of parental emotional rejection remained significant independent of the other main effects, and consistent with the hypotheses, engaged coping moderated the association between parental emotional rejection and negative emotions in response to infant distress. As illustrated in Figure 3, emotional rejection is positively associated with negative emotions when engaged coping is low. When engaged coping is high, there is no association.

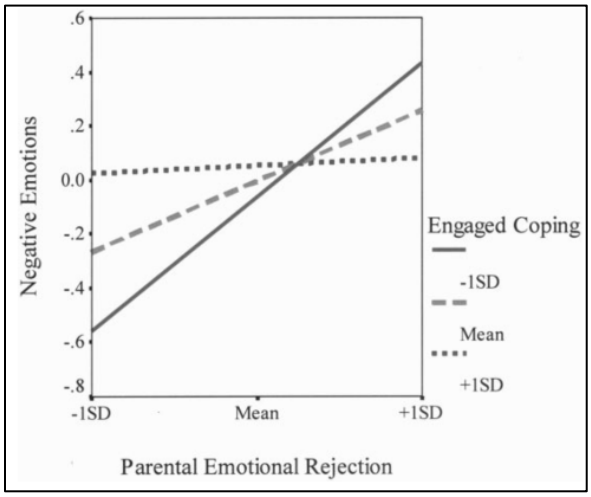

FIGURE 3. Moderating effect of engaged coping on the association between a history of emotional rejection and negative emotional reactions to infant distress.

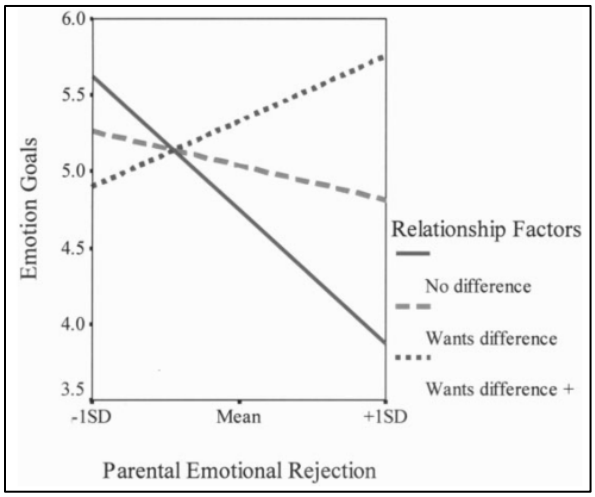

FIGURE 4. Moderating effect of a desire to be different and intervening relationship factors on the association between a history of emotional rejection and infant emotion focused goals.

Emotion Goals. Consistent with the hypothesis, relationship moderators interacted with parental emotional rejection to predict emotion goals. As displayed in Figure 4, parental emotional rejection was negatively associated with infant emotion focused goals when mothers *did not* express a desire to be different from their parents. When mothers wanted to be different but had no positive intervening experiences to assist change, there was a mild negative association between emotional rejection and emotion goals. In contrast, when mothers wanted to be different

from their own parents *and* had experienced positive intervening relationships, emotional rejection was mildly positively associated with infant emotion focused goals.

DISCUSSION

Consistent with an attachment theory framework, mothers' early experiences predict and appear to affect how they perceive, interpret, and feel about infants' distress cues, although the nature of the associations between early experiences and emotional competencies vary depending on intervening relationships, events, and personal characteristics.

That mothers whose emotional needs were not met in childhood were less confident in their ability to respond to their infants' distress at 6 months is consistent with evidence that childhood history is related to global maternal self-efficacy (Leerkes & Crockenberg, 2002). Mothers whose emotional needs are met may develop more positive feelings of self that generalize to the parenting domain, or they may feel more confident in the realm of emotions given the positive models provided by their own parents. That mothers whose emotional needs were not met in childhood were less empathic and experienced more negative emotions in response to infant distress is consistent with Fonagy et al.'s (1993; Fonagy et al., 1991) view that mothers with secure working models are more capable of empathy by virtue of their self-reflection and perspective taking. Mothers with insecure working models appraise distressed infants more negatively (Adam et al., 1998), and this attribution bias may contribute to their negative emotions and limited empathy.

That the association between childhood emotional rejection and some of the subsequent emotional competencies was moderated by intervening characteristics and relationships is consistent with the attachment theory view that internal working models may change over time due to new relationships and experiences (Bowlby, 1980). A history of emotional rejection did not exert a negative effect on accuracy when marital dysfunction was low, and mothers' use of adaptive coping strategies buffered them from the negative effect of childhood history on negative emotions. These effects are consistent with previous findings that a positive marital relationship and positive personality traits buffer mothers from the effects of early emotional deprivation (Ricks, 1985; Rutter et al., 1983). Mothers with dysfunctional marriages may be too distressed and self-focused to notice or interpret infant cues accurately, thereby undermining their accuracy when their infants are distressed. In contrast, mothers who have a repertoire of adaptive strategies for dealing with stress may feel less challenged or threatened by infant distress, thereby reducing negative arousal.

A desire to be different, accompanied by positive intervening relationship factors, moderated the effect of childhood history on mothers' emotion goals. When mothers wanted to be different *and* experienced at least one positive intervening relationship or event, there was a positive association between emotional rejection and emotion goals. It may be that the combined experience of knowing how it feels to have one's emotions ignored or punished and subsequently having a more nurturing relationship allows these mothers to be particularly attentive to infant emotions. One mother described her difficult childhood, her self-reflection, and her loving husband as contributors to her beliefs about emotions. Her emotion goals were rated as the fifth-highest in the sample, illustrating this effect.

> I had the opposite of the ideal childhood… because my parents divorced when I was 8, and before that, you know my father was a VERY ANGRY [*mother's emphasis*] full of rage VIOLENT [*mother's emphasis*] person… and um like when I was filling out the surveys I was thinking WOW [*mother's emphasis*] you know there was no NOT [*mother's emphasis*] a loving, sensitive, kind, calm feeling AT ALL [*mother's emphasis*]. And, not much of that changed even when my father left. There was still… our lives were full of conflict. And my mother was very self-absorbed because she was trying to raise 4 kids on her own and my father completely ditched us. And so I think, I think these are things like you asked how I came up with thinking these things are important for kids: I think it's something that I thought about ALL [*mother's emphasis*] my life. About how a child's life should be lived, like how a parent should be. And then meeting C. [*her husband*] was a real validation of that because I loved the way that he turned out and how he was treated, and I think that's the right way to treat your kids. Like I was saying to him last night, I think that kids who have a childhood like mine can go one of two ways. They…. either the cycle continues or they do the exact opposite, and their life goal is to be nothing like their parents in that respect…. And I have to say I think C. taught me how to be sensitive and loving because I didn't have any training from my own parents.

In contrast, merely wanting to be different from parents was not sufficient to protect mothers from the negative effect of childhood history on emotion goals, likely because these mothers lacked intervening relationships that promote a sense of being loved and provide a model of how to respond sensitively to others' emotions. A quote from one mother illustrates this conflict:

> My parents were never really around much . . . they didn't really care if I was upset. It was mostly . . . like get over it. They either ignored it, ya know, or got mad . . . . D. [*her husband*] tries to help, but it's real frustrating. We don't agree, and he does things his way when I am not around. Then I feel like I have to start all over again. We end up fighting about it more than anything. [*Interviewer: Would you describe him as supportive?*] No . . . . When she's upset [*referring to her daughter*], I really want to be there for her and make her feel like I care . . . but I just don't know how [*mother begins to cry, and asks to stop interview*].

This mother primarily discussed self-focused emotion goals aimed at stopping her infant's crying quickly or getting away from her infant because the crying made her feel tense. This underlying discomfort with negative emotions, accompanied by a feeling of helplessness, appears to be a legacy that cannot be broken merely by a desire to be more responsive than one's own parents. That the outcomes for these mothers varied so dramatically despite their similarly difficult childhoods and a desire to be different from their parents illustrates the significance of positive intervening relationships in relation to sensitive parenting.

In addition to demonstrating direct and moderated effects of childhood history on mothers' parenting emotions and cognitions, this research also supported the view that personality and infant characteristics affect mothers' emotional and cognitive responses to infant distress. Notably, each measure that reflected maternal avoidance (i.e., disengaged coping and pre- and postnatal marital avoidance) was negatively associated with infant emotion focused goals. That

is, mothers who prefer to avoid problems have parenting goals that are more self- than infant focused and focus little on addressing the infant's emotional state—in this case, the problem or stressor of interest. This supports the view that maternal avoidance contributes to a characteristic style of responding to stressors across normative contexts and complements recent research that has identified other personality traits (e.g., extraversion, conscientiousness) as predictors of parents' perceptions and emotional responses to infant crying (Zeifman, 2003).

That infant negative emotionality predicted mothers' accuracy and emotional reactions is consistent with the view that child characteristics influence maternal behavior. Contrary to expectation, however, infant temperament did not undermine mothers' emotional competencies. Rather, infant distress correlated positively with accuracy and negatively with negative emotions. Mothers whose infants cry frequently may have increased opportunities to practice identifying the underlying emotion, and the stakes for identifying subtle cues may be higher because it may be easier to soothe a mildly distressed infant than one who is intensely distressed, thereby enhancing accuracy. Such mothers may experience fewer negative emotions in response to infant distress in part because they become desensitized to the negative arousing properties of crying given their frequent exposure. These positive effects may be unique to low-risk mothers. Mothers at risk by virtue of life stress, limited social support, or psychopathology may react more negatively to their infants' crying (Crockenberg, 1986; Crockenberg & Leerkes, 2003).

When considered in conjunction with previous research that has demonstrated positive associations between the emotional competencies and maternal sensitivity (Leerkes et al., 2004), these results suggest that the association between the more global and sometimes distal predictors and maternal sensitivity noted by others (e.g., Belsky, 1984) are mediated in part by mothers' cognitions and emotions. This has important empirical, theoretical, and clinical implications. First, the emotional competencies examined in this study represent quantifiable factors that reflect the internal processes by which, attachment theorists have long argued, internal working models affect maternal behavior. Directly measuring these factors via in-depth interviews and demonstrating that they correlate both with childhood history and maternal sensitivity lends strong support for the attachment theory view that stability in caregiving across generations is accounted for by the cognitive and emotion representations that constitute "internal working models." These findings provide additional support for the use of attachment-oriented interventions aimed at altering how mothers view themselves, their past relationships, and the needs of others to enhance these emotional competencies and maternal sensitivity to infant distress (Fraiberg, 1980; Heinicke, Fineman, Ponce, & Guthrie, 2001; Heinicke et al., 1999; Lieberman & Pawl, 1993).

Several limitations of the current research should be noted. First, the relatively small sample precluded testing of additional interactions, notably with infant temperament. Second, this community sample was homogenous with respect to race, education, and income, and few mothers displayed risk characteristics, restricting the range on key variables and limiting the generalizability of the results. Third, mothers' emotions and cognitions were assessed in response to stranger infants, and others have demonstrated that maternal responses to crying vary in response to stranger and own infants (Weisenfeld & Klorman, 1978); however, in previous research with this sample, mothers' emotional competencies in response to the stranger infants were highly consistent with their emotional competencies in response to their own infants and

predicted maternal sensitivity (Leerkes et al., 2004), reducing this concern. That more attachment-oriented measures (i.e., the AAI) were not included in this study could be viewed as a limitation, particularly in view of concerns that questionnaire measures may not identify dismissive mothers who tend to idealize their parents (George et al., 1985). Nevertheless, that several of the proposed effects were significant despite these limitations lends support to this attachment-oriented model. Additional prospective, longitudinal research that addresses these limitations and directly tests the mediating role of maternal cognitions and emotions on the association between childhood history and maternal sensitivity is warranted.

Acknowledgements:

We are grateful to the families who generously donated their time, the Visiting Nurse Association, Beginnings, and Primetime for their help in recruiting participants, Lindsay Bennigson for sharing data, Ellen Leen and Regan Beaudry for assisting in the development and application of qualitative coding schemes, and the following undergraduates and volunteers for assistance with data entry, transcribing, and coding: Kerry Modry, David Centerbar, Julie Mulhern, Amanda Werner, Regina Miller, Jeannine Pablo, Maya Carlet, Samantha Thomas, Kerstin Grieshaber, Erica Hendalion, Amanda Heldt, Allyson Stern, Lisa Badanes, Lynne Babchuck, Emily Vilardo, Heather Kline, Michelle Clancy, Gina Berrera, Betsy Sprague, and Shamila Lekka. This project was supported by a SUGR and FAME award from the University of Vermont and a Child and Adolescent Psychology Research and Training Grant from Burlington, VT. The first author was supported by an American Dissertation Fellowship from the American Association of University Women. Direct correspondence to: Esther M. Leerkes, University of North Carolina at Greensboro, 228 Stone, P.O. Box 26170, Greensboro, NC 27402–6170; e-mail: emleerke@uncg.edu.

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